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Missouri: Measuring Performance from Enforcement and Compliance Assurance in Missouri
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Final Report on the Missouri DNR Enforcement Performance Measures System for EPA's Enforcement and Compliance Assurance Grants

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I. Information

State and Department: Missouri Department of Natural Resources
Title of Project: Measuring Performance from Enforcement and Compliance Assurance in Missouri
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II. Project Goals

- Incorporate features that facilitate information sharing with EPA.
- Identify the business rules needed to collect environmental performance measures.
- Build on the concepts used in EPA's Case Conclusion Data Sheets.
- Require no more than five minutes of staff time to collect the additional ETS information.
- Map the new ETS environmental performance measures to EPA's case conclusion data.
- Collect both quantitative and qualitative environmental performance data.
- Minimize the need for additional staff training in how to collect the new performance measures.
- Update ETS to include data entry information, sample reports and coding tables.

III. Status of Project Milestones

Project Milestones	Anticipated Completion Date	Completion Date
Develop protocol to identify type of actions to collect data		2/28/2001
Select data elements and design to the screen for the Enforcement Tracking System (ETS)		5/31/2002
Programming to Modify ETS		2/25/2002
System final testing and User Training		3/15/2002
Data Collection and data QA/QC Begins		3/15/2002

Develop Performance Report		8/15/2002

IV. Status of Project Completion

The Enforcement Performance Measures (EPM) addition to the Missouri DNR Enforcement Tracking System (ETS) has been in service since March 1, 2002. A total of 109 resolved enforcement cases have been entered into the system to date from the Air Pollution Control Program, the Public Drinking Water Program and the Hazardous Waste Program.

What follows in this report is some ETS background with an account of EPM procedures, problems encountered, how they were resolved and an assessment of the usefulness and future of the system.

V. ETS Background

DNR's automated Enforcement Tracking System dates back more than ten years. It has evolved from an extremely simple DOS based database to a much more sophisticated one based on Microsoft's Access platform. Data is entered by six media enforcement or lab based offices in Jefferson City. The agency's regional offices have read only access to the database, as do all the rest of the offices in the agency. A seventh office, the Water Pollution Control Program, does not enter data into ETS at this time as programming work needs to be done to have its Water Quality Information System feed ETS and prevent duplicate entry. As a result, no water pollution EPM data is available yet in ETS.

ETS operates in conjunction with the Permit Actions Management System and the Production Tracking System (inspections and complaints) as the only agency wide regulatory tracking databases. ETS was the second of the three systems to be updated to the Access platform in 1999 and connected to the multimedia Facility/Site identification tables. Some difficulties were encountered early on regarding duplicate facility records, response time, business process definitions and programming quirks. Lack of system confidence promoted continued use and expansion of local databases, undermining ETS correction and refinement. Aside from the lack of WPCP data and continuing facility/site records refinement, ETS is now fully functional as originally designed. ETS will soon undergo further revisions to effectively couple it to the Production Tracking System dealing with inspections and complaints.

VI. ETS/EPM Data Entry Procedures

ETS is designed to allow flexibility to the central program offices as to the means to enter data. It is easy and quick enough to have the enforcement technical staff do entry or to have the clerical staff do that work.

With the addition of the EPM subsystem, the ETS users (those who get into ETS on their computers) will find no change in methods to adding data except that once a case is resolved, the system will require the EPM aspects of the case be addressed. Most of the background data required in EPA's Case Conclusion Data Sheet will have been entered well prior to entering the performance measures. The EPM data has added a significant amount of data entry to the overall ETS system. A primary goal was to keep data development and entry to less than 5 minutes per resolved enforcement case.

ETS provides a data entry screen that lists and labels enforcement milestone date fields. When the "case resolved" date on this screen is entered, ETS immediately asks the user whether there are performance measures associated with the case. By selecting "no", ETS returns the user to the record requiring no further action on EPM. By selecting "yes", ETS shifts to a separate series of screens containing the EPM fields. The fields to be entered in the order listed are:

- Pollutant Category
- Medium (Air, Land, Water, Multimedia)
- Reduction Actions (Direct, Indirect)
- Environmental Benefits
- Health Concerns
- Counts or Measures

Each of these fields is required to be filled in using drop down selection lists provided; no freelance answers or blanks are allowed. Null values are available in the drop down lists. There is an exception to using the drop down list and that is for the Counts/Measurement fields whereby an appropriate number is entered.

If the drop down lists do not contain the desired selection(s), the lists may be revised upon request and review by the database manager at the division level. The manager will notify appropriate users around the agency before the change is made to seek comments on potential problems. All will be notified when changes are made.

A users' manual has been developed to aid the data entry personnel with ETS. (See Appendix A) The entire manual is available in Microsoft Word from the HELP button on the ETS screens. Once in the user manual document, the user can find desired topics using the page bookmarked table of contents or by simply using the standard "find" function in Word. The manual is read only so it cannot be altered in this process.

Two training sessions have been provided to the programs on the EPM system. Individual programs have requested and received program specific training as well.

Another aid for data entry is the data entry form developed for the technical staff to fill out and provide to the data entry personnel.

VII. Issues Encountered

As ETS is to serve 7 offices in 2 divisions within DNR, it is easy to imagine the difficulties identifying all meaningful data points and standardizing data parameters and definitions. Much time was spent on this during the design of the EPM subsystem to ETS. As the system is still relatively new, we continue to find definitional or omitted field problems. Each of the EPM data fields and blocks are covered below along with their associated issues.

Case Resolved Trigger Date. The trigger for EPM data entry is when the "case resolved" date field is entered. Aside from some lingering confusion about what that term "case resolved" means, it is not uncommon to have achieved some environmental benefits well in advance of a case being finally

resolved. ETS will not allow EPM data to be entered prior to case resolution though it may be many months or even years before a case is finally resolved. There have been discussions about allowing EPM data entry anytime performance measures have been completed especially considering that some cases are high profile and news reports detail progress as it happens. There is resistance internally to the additional data entry time. For now we have decided to keep the system the way it is and further evaluate the issue after more data is collected and time has elapsed.

Pollutant Category Listings. The design team determined that the EPM list used to select the pollutant categories should not be too specific and lengthy or the data entry activity will become too time consuming and the meaning to the public will drop. For instance, a number of drums of hazardous waste may contain scores of various hazardous organics, but each organic does not need to be listed and quantified. It would be sufficient to call them organics and count the number of drums involved. The current list does still contain 50 listings and does take some precious seconds to locate the right one. There is some overlap in the listings that has caused some confusion as to which to select (e.g. Lead and heavy metals) The list is multimedia and where overlap occurs questions occur about meanings of terms and the potential for double counting. Some listings seem to be more safety rather than environmentally oriented, but these are our issues and are appropriate for us. Questions about pollutant listings will persist as we continue to refine the system.

Environmental Media. We chose to stay with the Air, Land, and Water as media selections instead of the more detailed media listings EPA used. Even with the more detailed listings, there still seemed to be a lot of overlap. Those reviewing the EPM information will likely be served nearly as well with the simpler categorization. We simply acknowledge the overlap and will associate enforcement cases as appropriate. Multiple choices can be made for each pollutant category.

Environmental Benefits. We decided it was useful to provide a brief description of how the environment was improved beyond simply removing or controlling pollutants. The descriptions are again shown in a drop down list where currently 30 descriptions reside. Some are very general (air quality improved), others more specific (boating use improved). Multiple choices can be made for each pollutant category. Where specific claims about benefits are made, it is recommended that the case actually be based in part on that claim.

Potential Health Concerns. This performance measure has been problematic for us. In the beginning it was very difficult to come up with a list of concerns that was meaningful but brief. When in production, we realized two things: 1) seldom are cases made on health concerns which places a burden on enforcement personnel to do additional work to determine and select the correct concerns, and 2) to associate health concerns with specific cases can imply that those cases were made on the basis of those health concerns, when typically we have little or no clinical information about any health issues caused by the violation. We are considering dropping this field from the database.

Counts and Measures. During the design phase we learned that it is fairly common for the tech staff not to calculate the specific pollutant quantities prevented. For speed of data entry purposes we thought an additional more qualitative method of measurement might be useful. Often the amounts of waste materials can be expressed in terms that have real meaning regarding the environment and could be a data point that can be summed. For instance, the number of tires removed, gallons of domestic wastewater reduced or the number of cubic yards of soil remediated. The field called

"Measures" has a drop down list which is to be used to select the appropriate unit of measure. It also includes "lbs." (EPA's preferred unit) for when that measure has already been calculated. With respect to the method of determining the data, we use a similar approach to EPA's but without always reducing the figures to pounds of pollutant.

The next performance measure, "Counts", as expected, has caused a good deal of questions among staff. This field was to be even more qualitative than "Measures" by allowing a simple count of occurrences of the nature of the violation. This was to be used only as a place holder when the "Measures" data was not available. An example would be the number of explosive detonations reduced . Staff sometimes believed, erroneously, that this was a count of the number of days or occurrences of violations cited. There currently is, however, a problem with the "Counts" fields as there is no means to identify what is being counted. Once programming time is freed up, this will be addressed.

Training. The first round of training provided was clearly not successful. Three months later the same training for the same people was again provided. The problem was the late release of the final version of ETS/EPM and a recalcitrance to take on additional tracking duties. Each program has considerable tracking in place already and were not enthusiastic about tracking information that seemed to have little to do with helping their workload. Since the last agency wide training, two very useful program specific sessions have been held. Users experienced with the system raised many hard questions and had many good comments about the use of the system. These type of training sessions as well as one on one training will be provided upon demand.

Quality Assurance. Quality assurance of the EPM data is necessary but it is not a simple task. Resolved enforcement case records can be easily reviewed to see if the EPM data is there, but then each case must be viewed separately to assure that answers have been selected and that they are appropriate. A series of reports has been suggested to help staff QA the EPM data. Currently, the canned reports available are summary reports that do not reflect case specific information necessary to locate and correct inaccurate data.

VIII. Assessment of the System.

Many of the goals set for the ETS/EPM system are finished or are within reach.

Goal	Status
Incorporate features that facilitate information sharing with EPA.	Data tables contain EPA crosswalk information to help facilitate potential data transfers.
Identify the business rules needed to collect environmental performance measures.	In place but continuing to be refined.
Build on the concepts used in EPA's Case Conclusion Data Sheets.	Done.
Require no more than five minutes of staff time to collect the additional ETS information.	ETS/EPM experienced staff can approach this.
Map the new ETS environmental performance measures to EPA's case conclusion data.	Data tables contain EPA crosswalk information to help facilitate potential data transfers.
Collect both quantitative and qualitative	EPM data collects qualitative and quantitative

environmental performance data.	data.
Minimize the need for additional staff training in how to collect the new performance measures.	Staff training will continue indefinitely at the rate required to make system work.
Update ETS to include data entry information, sample reports and coding tables.	In user's manual.

However, it is far too early to make final judgement of the effectiveness of the ETS/EPM system. Not only has the system had a number of operational problems, the system has not been used widely enough nor enthusiastically enough to be effective. The data collected to date would not be an effective means to communicate enforcement successes. As an agency, we are committed to provide meaningful environmental data about our enforcement activities to all that are interested. The EPM system is not there yet, but we will continue to use and refine the system to help meet this commitment.

Appendices

The EPM User's Manual can be found on the internet as Final Report (pt 2)

Appendix A

The EPM Standardized Reports

Appendix B.

The EPM User's Manual